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ABSTRACT

This is volume 6 of the series of translations of books from the Soviet literature on research in the psychology of mathematics instruction and on teaching methods influenced by the research. This book contains both a theoretical examination of the connection between instruction and the development of children, and experimental data on a definite solution to the problem with material for teaching mathematics, Russian language, and working in the primary grades. Teaching mathematics in the primary grades includes, on the one hand, acquainting children with the idea and rules of performing the four arithmetic operations, and on the other hand, teaching them how to become problem solvers. Specific psychological questions connected with the construction of these two parts of the mathematics curriculum are considered in the two parts of this book. Using the example of the operation of multiplication (chapter 1) and the number concepts of fractions (chapter 2) and concrete numbers (chapter 3), the first part analyzes a structuring of children's activities that is equivalent to the socially established sources for this operation and these concepts with critical side analyses of related conceptions commonly accepted in teaching manuals and handbooks. The second part of the book examines the place of arithmetic and algebraic methods in teaching primary school students to solve work problems. Chapter 4 describes a work system in which children from the first to the fourth grades learned problem solving solely on the basis of linear equations in one variable. Chapter 5 extends this notion to generalized methods for problem solving with algebraic notation. Chapter 6 describes the basic operations

underlying the ability to compose equations and outlines the stages in their formation in students in the first through fourth grades. (JJK)

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